

Appln. No. 09/228,772  
Amendment dated June 1, 2004  
Reply to Office Action of March 1, 2004

### REMARKS

This Amendment is being submitted concurrently and together with a Request for Continued Examination (RCE). Claims 3-10 and 13-16 are pending in the application. Claims 3, 4, 5, 6, 13 and 15 are independent. Claims 4, 6, 8, 10 and 13-16 have been deemed allowable, and claims 7 and 9 were objected to, but were deemed allowable if rewritten in independent form including all of the limitations of the base claim and intervening claims. Claims 3 and 5 were rejected. The claims have not been amended by this Amendment. By this Amendment, formalistic amendments were made to the drawings.

### Allowable Subject Matter

Applicants note with appreciation that, in the office action, claims 4, 6, 8, 10 and 13-16 were deemed allowable, and claims 7 and 9 were objected to, but were deemed allowable if rewritten in independent form including all of the limitations of the base claim and intervening claims. In addition, applicants note that they do not concur with the Examiner's stated reasons for allowance, especially any reason for allowance from which it might be inferred that presently rejected claims 3 and 5 are not in condition for allowance, due to the recitation of a particular fast converging algorithm.

### The Rejections Under 35 U.S.C. § 103(a)

Applicants respectfully believe that the Examiner, in the Office Action dated March 1, 2004, did not fully address applicants' specific arguments traversing the Examiner's rejections of claims 3 and 5 as set forth in applicants' Amendment dated November 10, 2004, but

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rather, that the Examiner only substantially repeated the previous rejections. "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it." MPEP § 707.07(f). Accordingly, applicants have re-addressed certain issues below, and applicants respectfully request that the Examiner reconsider these specific arguments and allow the remaining claims. In particular, applicants note that the teachings of the individual cited references are described not for the purpose of "attacking the references individually where the rejections are based on combinations of references," as stated in the Office Action, but instead, to clearly show that the proposed hypothetical combinations of references used as a basis for the obviousness rejections would not yield the claimed inventions as recited by claims 3 and 5. In order to show the deficiency of the hypothetical combination, the shortcomings of the references must be articulated. It is respectfully submitted that the proposed combinations cannot yield the inventions of claims 3 and 5.

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanemasa in view of U.S. Patent No. 5,951,625 to Duttweiler. Applicants respectfully traverse the rejection.

First, applicants submit that there is no teaching or suggestion in the references to make the hypothetical combination proposed by the Examiner, and thus the combination is improper. *See Al-site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308 (Fed. Cir. 1999), MPEP § 2143.01; *See also In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998) ("the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness."). Absent a motivation in the references, or in the art, as readily ascertainable by documented evidence, a combination of references is improper. Thus, the Examiner can satisfy

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this burden "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." *In re Lee*, 277 F.3d 1338, 1343, citing *In re Fritch*, 972 F.2d 1260, 1265 (Fed. Cir. 1992). As *In re Lee* requires, as does *In re Zurko*, 258 F.3d 1379, 1383-86, the Examiner must set forth with specificity where the motivation exists in the cited references, or, if the Examiner is relying on general knowledge of the art, that general knowledge must be capable of readily documented substantiation. If the Examiner is relying on well-known facts or common knowledge in the art to provide the motivation, such facts and knowledge must be of a nature that are "capable of instant and unquestionable demonstration as being well-known." MPEP § 2144.03.A., citing *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970) (requiring that the notice of facts beyond the record which may be taken by the Examiner must be capable of instant and unquestionable demonstration so as to defy dispute).

Claim 3 of the present application is directed to an adaptive filter utilizing a fast converging adaptive algorithm, means for modifying the algorithm by the application thereto of an adaptive scaled non-linearity, and a double talk detector connected to the adaptive filter for disabling the filter in response to the detection of double talk on a telephone circuit. The fast converging algorithm of claim 3 is PNLMS.

Kanemasa describes a system for echo cancellation that includes a fast convergence algorithm. With reference to Kanemasa (see Kanemasa at FIG. 4 and col. 10, lns. 37-68 and col. 11, lns. 1-4), the examiner argues that an adaptive scaled non-linearity is achieved by multiplier 62, hysteresis characteristic circuit 64, and absolute value circuit 60. While this contention of the Examiner is not conceded by the applicants, it has been conceded by the

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Examiner that Kanemasa does not describe the use of a PNLMS algorithm, as is recited by claim 3 of the present application. The Examiner has attempted to cure this deficiency through combination with another reference, namely Duttweiler.

Duttweiler, however, fails to cure this recognized deficiency. Duttweiler describes an adaptive filter that uses a fast converging PNLMS algorithm to distribute energy evenly across a tap (see Duttweiler at FIG. 2 and col. 4, lns. 38-55). Importantly, Duttweiler does not describe an adaptive scaled non-linearity for modifying the adaptive filter coefficients or the use of a double-talk detector with an adaptive filter employing such adaptive scaled non-linearity. Therefore, it is respectfully submitted, one skilled in the art reading Kanemasa would not be motivated to seek a solution in Duttweiler, as they are directed to different problems.

Because of the very different methodologies and structures described by Kanemasa and Duttweiler, the proposed hypothetical substitution of the PNLMS algorithm of Duttweiler into the system of Kanemasa, even if somehow proper, would not yield the claimed invention. Specifically, if Duttweiler's PNLMS algorithm were to be inserted into the system of Kanemasa (see Kanemasa at FIG. 4), it could only logically be inserted in place of the multiplier 62, hysteresis characteristic circuit 64, and absolute value circuit 60 of Kanemasa. This has not been refuted by the Examiner. This substitution, however, would result in an echo cancellation system without any adaptive scaled non-linearity as claimed, since the structure in Kanemasa relied upon by the Examiner as allegedly teaching the adaptive scaled non-linearity, namely multiplier 62, hysteresis characteristic circuit 64, and absolute value circuit 60 must be replaced by the Duttweiler fast converging algorithm, i.e., PNLMS. While the hypothetical resulting circuit would include polarity discriminator 50 (see Kanemasa at FIG. 4), discriminator 50 of

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Kanemasa only provides for a generic non-linearity, not an adaptive scaled non-linearity, as claimed. This lack of a specifically recited claim element would be the result regardless of which fast converging algorithm were chosen.

Because the design and functionality of Duttweiler is not directed to the use of an adaptive scaled non-linearity for modifying adaptive coefficients, nor the use of a double-talk detector in conjunction with an adaptive filter using an adaptive scaled non-linearity, and in fact, Duttweiler is addressing a different problem in a different way than that of Kanemasa, a person of ordinary skill in the art would not look to make the proposed combination of Duttweiler with Kanemasa. Moreover, it is axiomatic that any combination of references, to meet the standards of Section 103, must yield all of the elements of the allegedly obvious claim. See *In re Royka*, 490 F.2d 981 (CCPA 1974). It is not possible to achieve the claimed invention of claim 3 with the hypothetical Kanemasa-Duttweiler combination, since the combination would necessarily be missing a claimed element, namely the adaptive scaled non-linearity.

Therefore, applicants respectfully submit that even if one were to make the proposed hypothetical Kanemasa-Duttweiler combination, the resulting system would not contain all of the claimed features of claim 3 of the present application, and is thus not a proper Section 103 combination. Accordingly, applicants respectfully submit that claim 3 is patentable over the cited references, and respectfully request the withdrawal of the rejection to claim 3 under 35 U.S.C. § 103(a).

Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kanemasa in view of U.S. Patent No. 5,428,562 to Gay. Applicants respectfully traverse the rejection.

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First, applicants submit that there is no teaching or suggestion in the references to make the hypothetical combination proposed by the Examiner, and thus the combination is improper. *See Al-site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308 (Fed. Cir. 1999), MPEP § 2143.01; *See also In re Rouffet*, 149 F.3d 1350 (Fed. Cir. 1998) ("the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness."). Absent a motivation in the references, or in the art, as readily ascertainable by documented evidence, a combination of references is improper. Thus, the Examiner can satisfy this burden "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references." *In re Lee*, 277 F.3d 1338, 1343, citing *In re Fritch*, 972 F.2d 1260, 1265 (Fed. Cir. 1992). As *In re Lee* requires, as does *In re Zurko*, 258 F.3d 1379, 1383-86, the Examiner must set forth with specificity where the motivation exists in the cited references, or, if the Examiner is relying on general knowledge of the art, that general knowledge must be capable of readily documented substantiation. If the Examiner is relying on well-known facts or common knowledge in the art to provide the motivation, such facts and knowledge must be of a nature that are "capable of instant and unquestionable demonstration as being well-known." MPEP § 2144.03.A., citing *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970) (requiring that the notice of facts beyond the record which may be taken by the Examiner must be capable of instant and unquestionable demonstration so as to defy dispute).

Claim 5 of the present application is directed to an adaptive filter utilizing a fast converging adaptive algorithm, means for modifying the algorithm by an adaptive scaled non-linearity, and a double talk detector connected to the adaptive filter for disabling the filter in

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response to the detection of double talk on a telephone circuit. The fast converging algorithm of claim 5 is APA.

As described above, Kanemasa describes a system for echo cancellation that includes a fast convergence algorithm. The examiner posits that an adaptive scaled non-linearity is achieved by multiplier 62, hysteresis characteristic circuit 64, and absolute value circuit 60. While this contention of the Examiner is not conceded by the applicants, it has been conceded by the Examiner that Kanemasa does not describe the use of an APA algorithm, as is recited by claim 5 of the present application. The Examiner has attempted to cure this deficiency through combination with another reference, namely Gay.

Gay, however, fails to cure this deficiency. Gay describes an adaptive filter wherein the fast converging algorithm is APA (see Gay at FIG. 1 and col. 2, lines 53-65) to achieve fast convergence through sample-by-sample updating with low complexity (see Gay at col. 1, lns. 46-47). Importantly, Gay does not teach an adaptive scaled non-linearity for modifying the adaptive coefficients or the use of a double-talk detector with an adaptive filter employing such adaptive scaled non-linearity. Therefore, it is respectfully submitted, one skilled in the art reading Kanemasa would not be motivated to seek a solution in Gay, as they are directed to different problems.

As was discussed above with respect to the proposed hypothetical Kanemasa-Duttweiler combination, because the design and functionality of Gay is not directed to the use of an adaptive scaled non-linearity for modifying adaptive coefficients, nor the use of a double-talk detector in conjunction with an adaptive filter using an adaptive scaled non-linearity, a person of

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ordinary skill in the art would not look to make the proposed combination of Duttwiler with Gay.

Moreover, because of the very different methodologies and structures described by Kanemasa and Gay, a hypothetical substitution of the APA algorithm of Gay into the system of Kanemasa would not yield the claimed invention. Specifically, if Gay's APA algorithm were to be inserted into the system of Kanemasa (see Kanemasa at FIG. 4), it would need to be inserted in place of the multiplier 62, hysteresis characteristic circuit 64, and absolute value circuit 60 of Kanemasa. This substitution, however, would yield an echo cancellation system without any adaptive scaled non-linearity, as any such functionality in Kanemasa would rely upon multiplier 62, hysteresis characteristic circuit 64, and absolute value circuit 60. While the hypothetical resulting circuit would include polarity discriminator 50, discriminator 50 of Kanemasa only provides for a generic non-linearity, but not an adaptive scaled non-linearity. Moreover, it is axiomatic that any combination of references, to meet the standards of Section 103, must yield all of the elements of the allegedly obvious claim. See *In re Royka*, 490 F.2d 981 (CCPA 1974). It is not possible to achieve the claimed invention of claim 3 with the hypothetical Kanemasa-Gay combination, since the combination would necessarily be missing a claimed element, namely the adaptive scaled non-linearity.

Therefore, applicants respectfully submit that even if one were to make the proposed hypothetical Kanemasa-Gay combination, the resulting system would not contain all of the claimed features of claim 5 of the present application, and is thus not a proper Section 103 combination. Accordingly, applicants submit that claim 5 is patentable over the cited references, and respectfully request the withdrawal of the rejection to claim 5 under 35 U.S.C. § 103(a).



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**Amendments to  
the Drawings**

By this Amendment, applicants have made proposed changes to FIGS. 1 and 2. The proposed changes to FIGS. 1 and 2 include changing the text within the boxes denoting FIR filter 10 to read "finite" impulse response filter instead of --fast-- input response filter 10.

These changes were previously submitted in an Amendment dated November 10, 2003, but were objected to by the examiner because the identifications "Replacement Sheet" and "Annotated Marked-up Drawing" were made at the "top" margins, but with respect to landscape mode (the orientation of the drawings), instead of the required "top" with respect to portrait mode orientation. Accordingly, the drawings presently being submitted have the identifications placed at the top of the drawings with respect to portrait mode orientation, and thus, entry of the proposed amendments is respectfully requested.

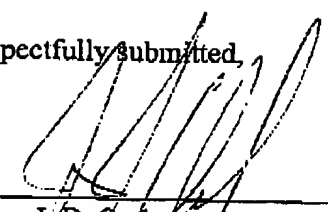
**CONCLUSION**

Applicants respectfully submit that all outstanding rejections have been addressed and are now either overcome or moot. Applicants further submit that all claims pending in this application (claims 3-10 and 13-16) are patentable over the prior art. Reconsideration and withdrawal of those rejections and objections is respectfully requested.

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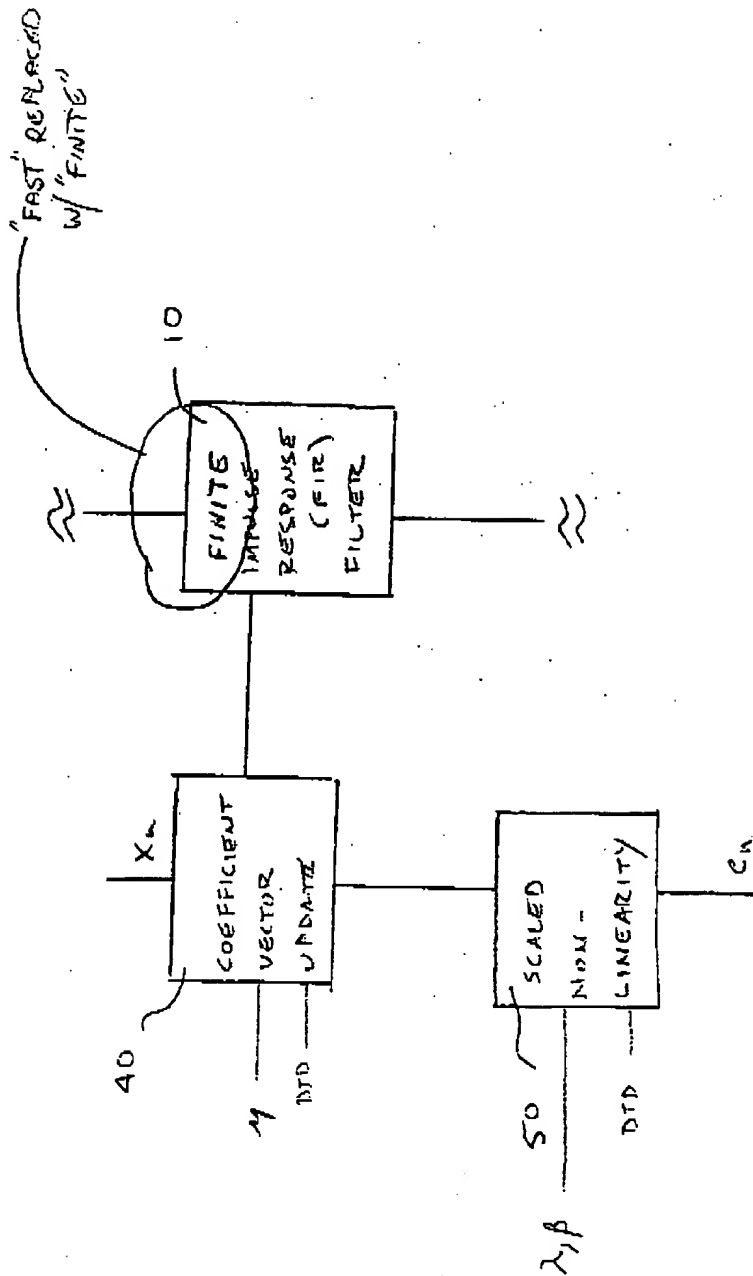
The Commissioner is authorized to charge any fee deficiencies to deposit account  
no. 19-4709.

Respectfully submitted,



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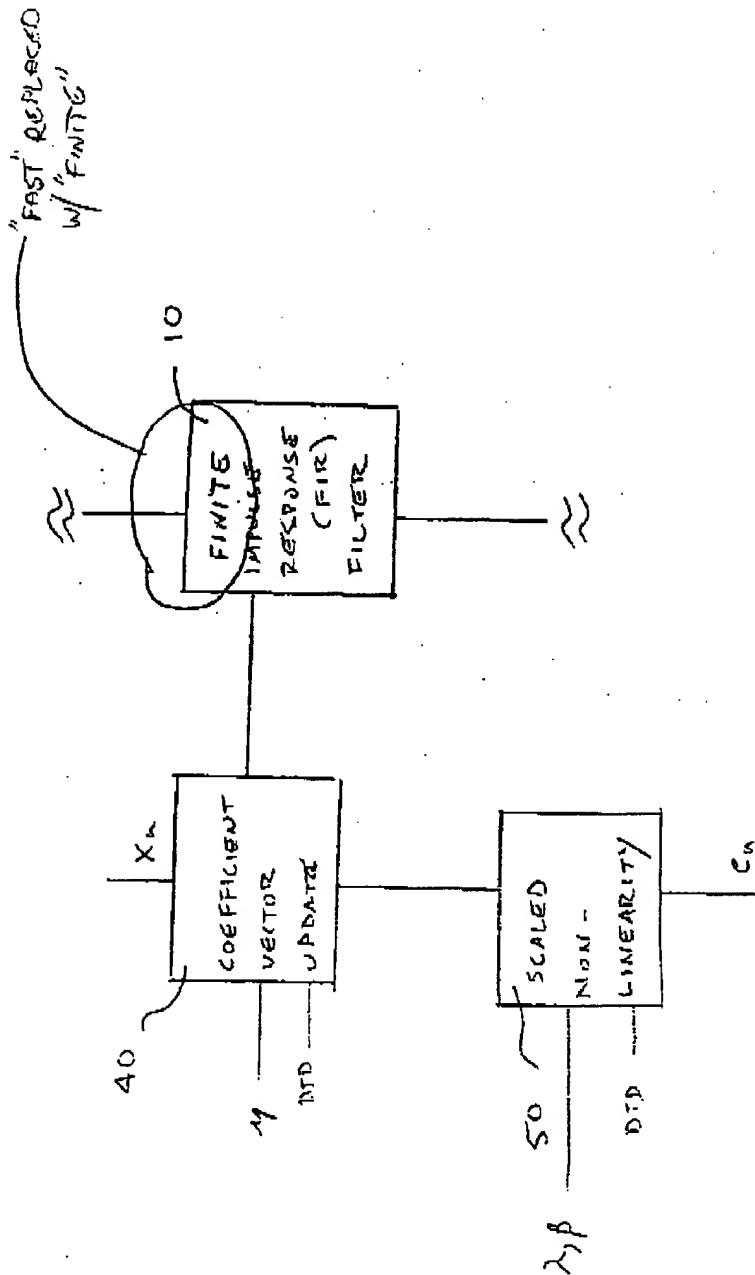


FIG. 2